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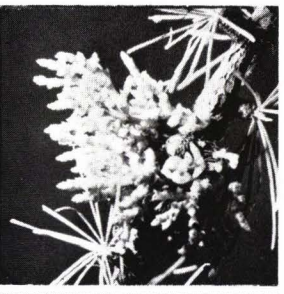

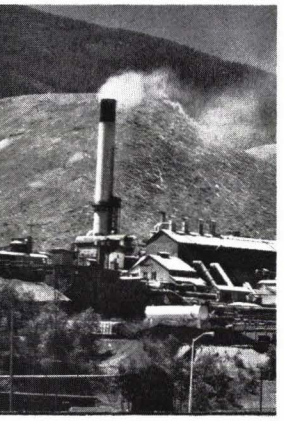

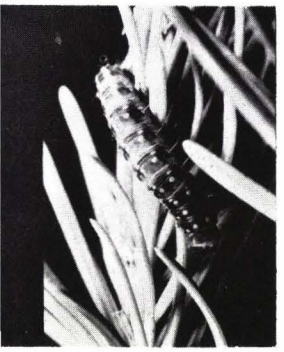

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POTENTIAL DEFOLIATION IN 1979 FROM A PONDEROSA PINE NEEDLE MINER ON THE FLATHEAD INDIAN RESERVATION AND MISSOULA VALLEY, MONTANA

By

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ABSTRACT

A needle miner, Coleotechnites sp., defoliated approximately 3,100 acres of ponderosa pine, Pinus ponderosa Laws. on the Flathead Indian Reservation, Montana, during 1978. Three other small areas in the Missoula Valley were infested also. Overwintering populations of larvae are low; thus, light defoliation is expected in 1979 in presently infested areas.

INTRODUCTION

The first recorded outbreak in Montana of a ponderosa pine needle miner, Coleotechnites sp., occurred in 1977. Aerial surveys revealed approximately 10,000 acres heavily defoliated in 1977 on the Flathead Indian Reservation. This decreased to about 3,100 acres of light to moderate defoliation in 1978. Needle mining was again observed on the ground in three areas in the Missoula Valley.

An evaluation of the overwintering larval population was made on the Flathead Indian Reservation in November to predict potential defoliation during 1979.

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LIFE HISTORY AND HABITS

This insect overwinters as a single larva inside a current or previous year's ponderosa pine needle. Larvae resume needle mining in the spring and are about full grown by the end of June. Damage is most conspicuous at this time. Pupation occurs in the mines about mid-July and moths start emerging by mid-August. Eggs are probably laid on the needles near the entrance hole and hatch in September. Some mining takes place in the fall and during warm periods in the winter.

A more thorough description of the life cycle and damage is given by Tunnock and Meyer (1978).

METHODS

Two ponderosa pine stands that showed defoliation visible from the air were sampled for overwintering larvae (figure 1).

No standard method has been developed for predicting trends of this needle miner. Stevens (1973) listed percentages of needles infested by the year they were produced. In Montana, almost all mined needles are those of the current or previous year. The average percent of these needles infested in an area was used to predict 1979 defoliation.

At each area the percent needles with live larvae was determined by cutting five 12-inch branch tips from mid-crown from each of five trees. In the laboratory fifty 1977 and fifty 1978 needles were inspected from each branch tip for live larvae. Total needles examined per area was 2,500.

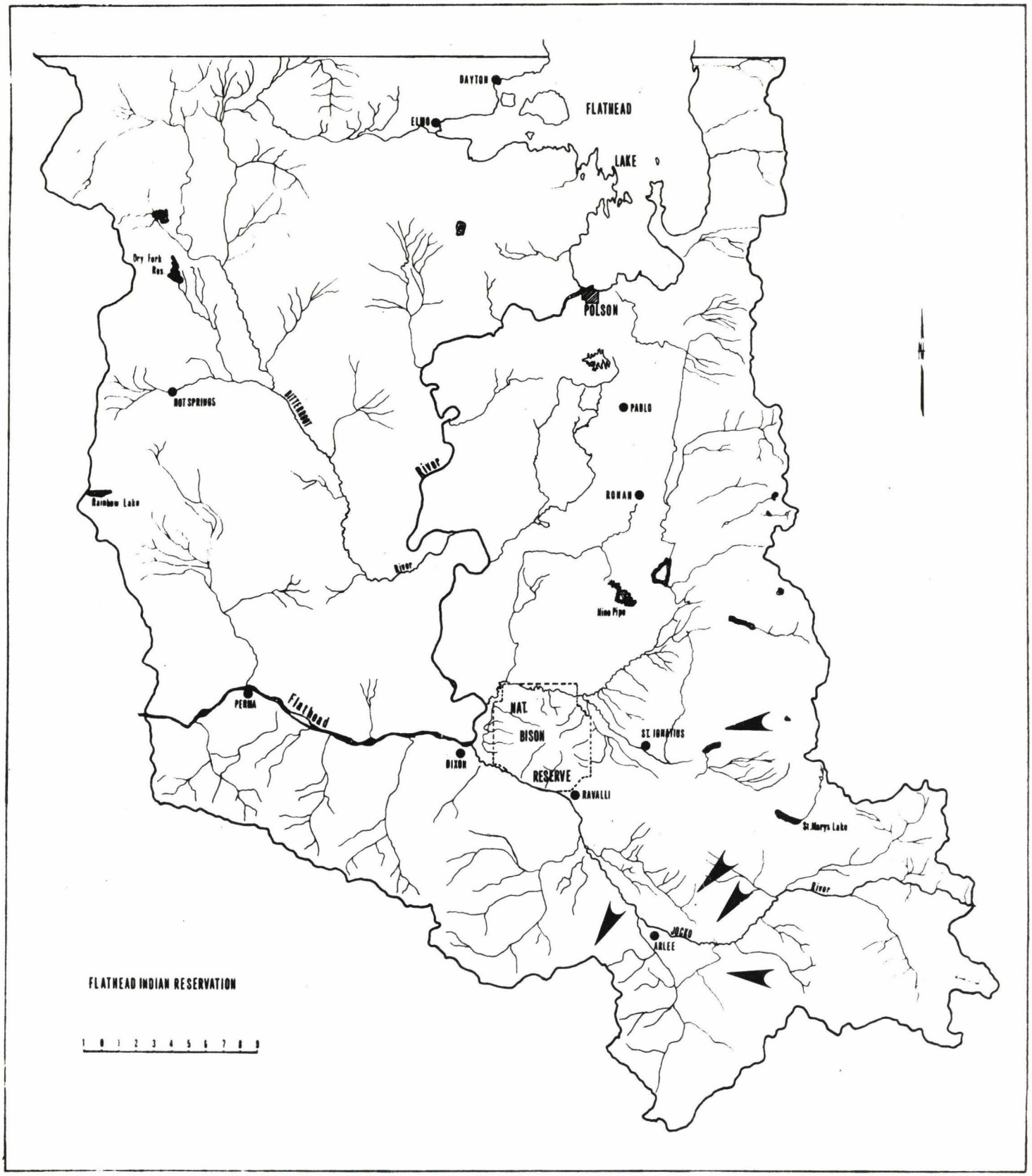
RESULTS AND DISCUSSIONS

Percent needles with live larvae in the area west of Arlee (T. 16 N., R. 20 W., Sec. 9) was 3.9 percent with 30.5 percent larval mortality. Live larvae were also found in 3.9 percent of the needles at Agency Creek (T. 16 N., R. 19 W., Sec. 22) and there was 23.4 percent larval mortality. Defoliation in both stands should be light in 1979.

Needle miner populations in these two areas are probably representative of those in the other infested stands on the Reservation. We expect no greater than light defoliation on the Reservation in 1979.

In the Missoula Valley, ground observations showed new needle mining to be light in Roman Creek (T. 15 N., R. 21 W., Sec. 21), Houle Creek (T. 15 N., R. 21 W., Sec. 18), and on the University of Montana campus.

We expect the needle miner outbreak will probably terminate by the fall of 1979.



Areas of visible defoliation by the Ponderosa Pine Needle Miner in 1978.

Figure 1

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